

**What Is Claimed Is:**

1. A method for processing medical information, comprising the steps of:  
obtaining a medical record of a patient, wherein the medical record comprises  
patient information from one or more structured and unstructured data sources; and  
5 automatically extracting billing information from the medical record by analyzing  
the patient information in the medical record using domain-specific criteria.

2. The method of claim 1, wherein extracting billing information comprises  
extracting one or more billing codes.

10 3. The method of claim 2, wherein the billing codes comprise a diagnosis  
code, a procedure code or both.

4. The method of claim 1, wherein the patient information comprises clinical  
15 information and financial information of the patient.

5. The method of claim 1, wherein extracting billing information comprises  
extracting all billing codes that are supported by the patient information based on all  
domain-specific criteria in a domain knowledge base.

20 6. The method of claim 1, wherein the domain-specific criteria comprises  
institution-specific domain knowledge.

7. The method of claim 6, wherein the institution-specific domain knowledge relates to one or more of data at a hospital, document structures at a hospital, policies of a hospital, guidelines of a hospital, and variations at a hospital.

5 8. The method of claim 1, wherein the domain-specific criteria includes condition-specific or disease-specific domain knowledge.

9. The method of claim 8, wherein the condition-specific or disease-specific domain knowledge includes one or more of factors that influence risk of a condition or  
10 disease, disease progression information, complications information, outcomes and variables related to a condition or disease, measurements related to a condition or disease, and policies and guidelines established by medical bodies.

10. The method of claim 1, further comprising generating an explanation that  
15 includes one or more pointers to relevant patient information, relevant domain-specific criteria, or relevant patient information and domain-specific criteria, which supports the extracted billing information.

11. The method of claim 10, further comprising presenting the explanation to  
20 a user for verifying the billing information.

12. The method of claim 1, further comprising automatically generating a medical claim for the patient using the extracted billing information.

13. The method of claim 1, further comprising:  
presenting the extracted billing information to the user for verification; and  
automatically generating a medical claim for the patient using the extracted  
billing information, if the extracted billing information is verified by the user.

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14. The method of claim 13, further comprising:  
modifying the extracted billing information in response to user input, if the billing  
information is not verified by the user; and  
automatically generating a medical claim for the patient using the modified  
extracted billing information.

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15. The method of claim 1, further comprising automatically updating the  
medical record of the patient using the extracted billing information.

16. The method of claim 15, wherein automatically updating the medical  
record comprises using the extracted billing information to (i) correct billing information  
in the medical record, which is determined to be incorrectly recorded in the medical  
record or (ii) insert billing information into the medical record, which is determined to be  
missing from the medical record.

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17. The method of claim 15, further comprising presenting an updated  
medical record to a user for verification, wherein automatically updating the medical  
record of the patient is performed in the updated medical record is verified by the user.

18. The method of claim 1, further comprising:

- (a) automatically assessing the quality of the patient information of the medical record using the extracted billing information to obtain quality assessment results; and
- (b) storing the quality assessment results for the medical record.

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19. The method of claim 18, further comprising performing steps (a) and (b) for a plurality of medical records in an electronic database; and  
automatically generating quality assurance statistics based on the quality assessment results obtained for the plurality of medical records.

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20. The method of claim 18, wherein the quality assessment results comprise information regarding occurrences of correct, incorrect and/or missing billing codes in the medical record.

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21. The method of claim 1, further comprising automatically determining an expected amount of medical billing reimbursement based on the extracted billing information.

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22. The method of claim 21, further comprising:  
maintaining the expected amount in the medical record; and  
reconciling the expected amount with an actual reimbursement received.

23. The method of claim 21, wherein determining an expected amount of medical billing reimbursement further depends on whether or not clinical guidelines have been followed as specified by domain-specific criteria.

5           24. The method of claim 10, wherein the explanation further comprises information as to whether or not clinical guidelines have been followed as specified by domain-specific criteria.

25. A system for processing medical information, comprising:  
10           a knowledge base comprising domain-specific criteria; and  
            an engine that automatically extracts billing information from a medical record, which comprises patient information from one or more structured and unstructured data sources, by analyzing the patient information using the domain-specific criteria.

15           26. The system of claim 25, wherein the engine extracts billing information comprising billing codes.

27. The system of claim 26, wherein the billing codes comprise diagnosis codes, procedure codes, or both.

20           28. The system of claim 25, wherein the engine generates an explanation that includes one or more pointers to relevant patient information, relevant domain-specific

criteria, or relevant patient information and domain-specific criteria, which supports the extracted billing information.

29. The system of claim 28, further comprising a user interface for presenting  
5 the explanation to a user to enable the user to verify the extracted billing information.

30. The system of claim 26, further comprising an automated billing system  
that automatically generates a medical claim for the patient using the extracted billing  
information output from the engine.

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31. The system of claim 30, further comprising a user interface that presents  
the extracted billing information to a user and enables a user to verify the extracted  
billing information and modify the extracted billing information before automatically  
generating a medical claim based on the verified or modified billing information.

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32. The system of claim 25, wherein the engine can automatically update the  
medical record of the patient using the extracted billing information.

33. The system of claim 31, wherein the engine can automatically update the  
20 medical record by using the extracted billing information to (i) correct billing information  
in the medical record, which is determined to be incorrectly recorded in the medical  
record or (ii) insert billing information into the medical record, which is determined to be  
missing from the medical record.

34. The system of claim 31, further comprising a user interface that presents an updated medical record to a user and enables the user to verify the updated medical record before automatically updating the medical record of the patient.

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35. The system of claim 25, wherein the engine can automatically assess the quality of patient information for each of a plurality of medical records using extracted billing information from each of the medical records and automatically generate quality assurance statistics based on the quality assessment results obtained for the plurality of medical records.

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36. The system of claim 35, wherein the quality assessment results comprise information regarding occurrences of correct, incorrect and/or missing billing codes in the medical record.

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37. The system of claim 25, wherein the engine can automatically determine an expected amount of medical billing reimbursement based on the extracted billing information from the medical record and reconciles the expected amount with an actual reimbursement received.

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38. The system of claim 25, wherein the system operates as a service by a service provider for processing patient medical records in a database of a subscribing entity.

39. A program storage device readable by a machine, tangibly embodying a program of instructions executable on the machine to perform method steps for processing medical information, comprising the steps of:

5 obtaining a medical record of a patient, wherein the medical record comprises patient information from one or more structured and unstructured data sources; and automatically extracting billing information from the medical record by analyzing the patient information in the medical record using domain-specific criteria.

10 40. The program storage device of claim 39, wherein the instructions for extracting billing information comprise instructions for extracting one or more billing codes.

15 41. The program storage device of claim 39, wherein the patient information comprises clinical information and financial information of the patient.

20 42. The program storage device of claim 39, wherein the instructions for extracting billing information comprise instructions for extracting all billing codes that are supported by the patient information based on all domain-specific criteria in a domain knowledge base.